We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

4,800
Open access books available

122,000
International authors and editors

135M
Downloads

Our authors are among the

154
Countries delivered to

TOP 1%
most cited scientists

12.2%
Contributors from top 500 universities

WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com

Chapter

Political and Institutional Dynamics of the Global Financial Crisis

Shanuka Senarath

Abstract

Asset securitization has been identified as an alchemy that 'really' works. Asset securitization yields a number of benefits to a financial system inter alia by reducing overall interest rates, enhancing liquidity in the banking sector and reducing intermediary costs. Yet, the recent global financial crisis (GFC) questioned the very existence of asset securitization. However, post-GFC literature is not hesitant to identify a list of causes that may have facilitated the GFC including subprime lending, executive compensation, de-regulation, etc. Adopting a lexonomic approach, this discussion deviates from the traditional approach by focusing on identifying political and institutional factors behind the GFC. This chapter will investigate U.S political economic decision and then U.S institutional setup that may have facilitated the stage for a GFC.

Keywords: asset-securitization, global financial crisis, asset-backed-securities

1. Introduction

This chapter provides a contextual background to those that follow by describing the GFC and its salient characteristics, and identifying salient causes of the crisis. Once these salient causes have been identified, the thesis proceeds to investigate the extent of the role, if any, that economics and political mechanisms underlying securitization may have had in facilitating the GFC. Financial economists generally trace the beginnings of the GFC to approximately mid-2007, when a number of key mortgage lenders specialising in sub-prime housing loans experienced financial distress. For a number of reasons, banks and other mortgage originators had, in the years preceding the GFC, been able to lend home loans to low-to-mid-income borrowers[1] This practice, and the securitization arrangements based on it, would generally not have proved problematic if house prices throughout the United States had continued to appreciate as they had under speculative boom conditions. Problems arose, however, when the U.S. housing boom burst in 2006, and particularly in residential areas housing concentrations of 'sub-prime' borrowers.

[1] Often referred as subprime borrowers who, under normal lending criteria, would have been refused loans (eg. because of poor credit histories).

As investors became increasingly reluctant to invest in securities based on sub-prime housing mortgages, this financial distress spread to securitizers of a sub-prime mortgage loans, and was further exacerbated when credit rating agencies such as Standard & Poor's, Moody's, and Fitch downgraded many mortgage-backed securities. In the words of Allen and Carletti, the mortgage-backed sub-prime home loan securitization market 'simply broke down' [1] and a general loss of confidence became more widespread, affecting commercial asset-backed securitization markets in the latter half of 2007. Banks sponsoring many residential and commercial securitizers were required, under the terms of cross-guarantee arrangements, to pay debts that otherwise would have remained off-balance-sheet as contingent liabilities [2].

Institutional and corporate investors internationally had also purchased securitization products, adding to the linkages between large financial institutions in different jurisdictions. At about the same time, other banks in the United States, Britain and elsewhere in Europe—themselves uncertain about the extent to which they might be called to make unexpectedly large payments from their reserves under their own cross-guarantee arrangements with related securitizers and other companies—became reluctant to provide any more than very short term liquidity (of more than a few days' tenor) to each other. Institutional investors engaged in a 'flight to quality', investing in highly liquid, secure assets such as Treasury bills and other government securities. In approximately March 2008, company reports of further bad debts and asset write-downs because of mark-to-market accounting increased uncertainty about counterparty risk levels, with the result that global investment bank Bear Stearns Companies Inc. was unable to secure wholesale funding to continue its operations past mid-March, when it was sold to JP Morgan Chase & Co. for approximately 7% of its pre-crisis equity value [3].

Internationally, central banks in consultation with their governments intervened in their respective economies by markedly reducing official or cash rates; injecting liquidity into the system by effectively lending to primary dealers (e.g. by allowing them to swap less liquid asset-backed securities for Treasury securities, often at a substantial discount); and so-called government 'bailouts' of securitizing institutions perceived to be economically significant or 'too big to fail' (such as Northern Rock in Britain; and Bear Stearns, Fannie Mae and Freddie Mac in the U.S.) [4, 5].[2] In subsequent months, real economies in the United States, Britain and elsewhere in Europe have exhibited historically poor performance, with relatively high unemployment and low economic growth, despite relatively low interest rates and inflation.

Abstracting somewhat from this background, the GFC's chief characteristics as identified in the literature can be clustered around excessive system liquidity; high levels of executive compensation by community standards; high levels of financial innovation; banks and other financial intermediaries undertaking activities beyond

[2] A number of high-profile investment bank securitizers requested government support, including Bear Stearns, Merrill Lynch, Wachovia, Goldman Sachs, and Morgan Stanley. Of these, Bear Stearns, Merrill Lynch and Wachovia were ultimately sold at well below their year high equity prices, while Goldman Sachs and Morgan Stanley ultimately became commercial bank holding companies, subject to prudential regulation but able to access Federal Reserve swaps into liquid assets at substantially discounted prices. Another high-profile securitizer, Lehman Brothers, went into involuntary liquidation. American International Group (AIG), a global insurer and sub-insurer which had ultimately insured many of the securitization schemes affected by collapsing asset prices, was saved from liquidation by a U.S. Federal Reserve Bank 'rescue package' that enabled AIG to deliver additional collateral to its credit default swap trading partners

their traditional roles; speculative asset bubbles; and the U.S. sub-prime crisis and the fallout resulting from it [6, 7].

This chapter looks into the main causes of the crisis, while developing a discussion on the contribution of each individual factor for the onset of the financial crisis. The chapter finds that GFC 2007 is a result of a number of factors. Some factors are linked with political decisions dated decades back in U.S political agenda, while some factors are market driven. The structure of the chapter is as fallows. Section 2 is a brief discussion on history of financial crisis in the modern world. Section 3, the main section of the chapter is a discussion on GFC 2007, with a special emphasis on housing bubble. This section glances over a number of contributory factors to the GFC including inter alia economical, financial, legal and behavioural factors that may have contributed to the onset of the crisis.

2. Speculative asset bubbles in modern financial history

Although examples of speculative bubbles are recorded in ancient times, in more recent times the most commonly cited early example of a speculative asset bubble is the Tulip Bubble in the 1600s. Tulips imported from East to Holland in the 1600s became a collector's item, and tulip bulbs were sold as very high prices. An influx of speculative funds was accompanied by a surge in financial innovation until the bubble burst in 1673, and many who had purchased bulbs on credit went bankrupt, precipitating an economic depression all over the country [8, 9].

A second commonly cited speculative bubble in early modern financial history was the collapse of the South Sea Company, reported in England in 1720. The South Sea Company was a joint stock company, which was awarded a Royal Charter (monopoly rights) to trade in North and South America, and became the subject of massive speculation throughout Europe. The company's share price, recorded at £128 in January 1720, increased almost tenfold to £1000 over the next 6 months to July 1720. By the end of 1720 following a bursting of the bubble, however, it had reverted to £124 per share [10].

It was in early 1920s that the Florida real estate bubble burst. However the ability to purchase real estate with a down payment of 10% provided the leverage to the asset bubble. Accordingly house prices went up grabbing more peculators in to the business. The bubble burst in advance with a typhoon hitting Florida causing massive property damage. The sudden drop in prices paved the way for bankruptcies and default. The Great depression, the most longest, widespread, and deepest depression of the 20th century took place after the stock market crash of October 29, 1929. The speculative asset bubble started to grow in late 1920s' with the boom in many industries[3] resulting stock market speculation and paving way for thousands of investors to invest in the stock market, were as most of the investors have borrowed the money for investments. The asset bubble rose to such a high extent that the lenders have given loans up to three times of the face value of the stocks investors have purchased. Expecting stock prices to raise more, more and more funds were invested in the stock market creating a massive asset bubble by 1929. At the end with the dropping commodity prices the stock prices began to fall. By October 29, panic selling started and the stock market collapsed, leading to the longest depression in the world history [11–14].

The 'Tronics' burst took place in 1961 with emergence of electronics in the market. A number of investors were keen on investing shares belonging to

[3] steel production, building, automobiles etc.

companies dealing with electronics. With the bubble burst in 1962, the share prices went down significantly. A speculative asset bubble, similar to the bubble in 1920s, took place in US by 1984. The speculative asset bubble was believed to be built on leverage and loose government economic policy. Similar to the event took place in 1920s. Junk bonds were the financial innovation of the day. The debts of less creditworthy companies were used as a tool to purchasing companies. Program trading and stock index futures were the other financial innovations. The Bubble peaked in October of 1987 followed by a stock market crash in a in a single day. Even though the public expectation was an economic depression, with the federal guarantee that they would guarantee the credit of market makers the recession never took place [15, 16].

In 2007 the housing prices in US believed to have grown more than 100%, within a decade's time. These bubble in house prices paved the way for house owners to refinance their houses at a lower rate and further to gain a second mortgage with backed by the price appreciation. Backed by large investment banks, small banks funded brokers by buying loans for the mortgage broker. Lending to the subprime market was significant by the time, enhancing the housing bubble. Compared to 2006 the housing prices declined 20% by September 2008. Leading borrowers to default. Douglas et al. (2012) identifies the 2007-8 Global financial crisis had resulted in significant negative impact all over the world, while making policy makes re-consider the fact that they can or should manage such asset bubbles [5–7].

Humans never seems to learn from their mistakes as greed becomes the prominent decision making factor for the human-financial decision making.[4] The main factor that distinguish GFC from the rest of the crises is the fact that DFC 2007 is based on a housing bubble. Yet, ironically all financial crises are based on some sort of an asset. In 1600s it was the Tulip Bubble. In South Sea bubble it was company stocks. Again in dot.com bubble it was company stocks. In each occasion a financial asset accumulates its price creating a bubble, which breakouts suddenly with changes in surrounding economic factors. Hence at a glance the GCF is quite unique, since it developed on real estate prices. Yet, a deep analysis revels that underling mechanism of the GFC is no difference to the rest.

3. The global financial crisis (GFC)

Financial economists generally trace the beginnings of the GFC to approximately mid-2007, when a number of key mortgage lenders specialising in sub-prime housing loans experienced financial distress. For a number of reasons set out below, banks and other mortgage originators had, in the years preceding the GFC, been able to lend home loans to low-to-mid-income borrowers who, under normal lending criteria, would have been refused loans (e.g. because of poor credit histories). This practice, and the securitization arrangements based on it, would generally not have proved problematic if house prices throughout the United States had continued to appreciate as they had under speculative boom conditions. Problems arose, however, when the U.S. housing boom burst in 2006, and particularly in residential areas housing concentrations of 'sub-prime' borrowers [5, 6, 17].

[4] See in general the discussion developed based on the concept 'casino capitalism' in Keynes's General theory [58].

As investors became increasingly reluctant to invest in securities based on sub-prime housing mortgages, this financial distress spread to securitizers of a sub-prime mortgage loans, and was further exacerbated when credit rating agencies such as Standard & Poor's, Moody's, and Fitch downgraded many mortgage-backed securities. In the words of Allen and Carletti, the mortgage-backed sub-prime home loan securitization market 'simply broke down' and a general loss of confidence became more widespread, affecting commercial asset-backed securitization markets in the latter half of 2007. Banks sponsoring many residential and commercial securitizers were required, under the terms of cross-guarantee arrangements, to pay debts that otherwise would have remained off-balance-sheet as contingent liabilities [6, 17].

Institutional and corporate investors internationally had also purchased securitization products, adding to the linkages between large financial institutions in different jurisdictions. At about the same time, other banks in the United States, Britain and elsewhere in Europe—themselves uncertain about the extent to which they might be called to make unexpectedly large payments from their reserves under their own cross-guarantee arrangements with related securitizers and other companies—became reluctant to provide any more than very short term liquidity (of more than a few days' tenor) to each other. Institutional investors engaged in a 'flight to quality', investing in highly liquid, secure assets such as Treasury bills and other government securities. In approximately March 2008, company reports of further bad debts and asset write-downs because of mark-to-market accounting increased uncertainty about counterparty risk levels, with the result that global investment bank Bear Stearns Companies Inc. was unable to secure wholesale funding to continue its operations past mid-March, when it was sold to JP Morgan Chase & Co. for approximately 7% of its pre-crisis equity value [2, 18].

Internationally, central banks in consultation with their governments intervened in their respective economies by markedly reducing official or cash rates; injecting liquidity into the system by effectively lending to primary dealers (e.g. by allowing them to swap less liquid asset-backed securities for Treasury securities, often at a substantial discount); and so-called government 'bailouts' of securitizing institutions perceived to be economically significant or 'too big to fail' (such as Northern Rock in Britain; and Bear Stearns, Fannie Mae and Freddie Mac in the U.S.).[5] In subsequent months, real economies in the United States, Britain and elsewhere in Europe have exhibited historically poor performance, with relatively high unemployment and low economic growth, despite relatively low interest rates and inflation [20].

Abstracting somewhat from this background, the GFC's chief characteristics as identified in the literature can be clustered around excessive system liquidity; high levels of executive compensation by community standards; high levels of financial innovation; banks and other financial intermediaries undertaking activities beyond their traditional roles; speculative asset bubbles; and the U.S. sub-prime crisis and the fallout resulting from it.

[5] A number of high-profile investment bank securitizers requested government support, including Bear Stearns, Merrill Lynch, Wachovia, Goldman Sachs, and Morgan Stanley. Of these, Bear Stearns, Merrill Lynch and Wachovia were ultimately sold at well below their year high equity prices, while Goldman Sachs and Morgan Stanley ultimately became commercial bank holding companies, subject to prudential regulation but able to access Federal Reserve swaps into liquid assets at substantially discounted prices. Another high-profile securitizer, Lehman Brothers, went into involuntary liquidation [19].

3.1 Law creates incentives

Even though each crisis has some link with the then legal system, GFC is quite unique with the fact that a number of deliberate legal provisions in U.S played an identifiable role is setting the stage for the crisis. Following is a brief discussion on the incentives created by legal provisions in the onset of the GFC.

Law and legal regulation create incentives and disincentives for market participants to behave in particular ways. For example, it was foreshadowed in 2002, in the aftermath of the Enron and WorldCom collapses, that the then-new corporate law reforms United States would be insufficient to control financial conglomerates' perverse incentives for risk-taking, particularly given problems of moral hazard, conflicts of interest, and the incentive of management of distressed institutions to postpone asset write-downs in the hope that their company's financial position might improve before the next disclosure to the investing public [22].

Moreover, market participants respond strategically to these incentives and disincentives, generally optimising utility within the constraints *inter alia* of bounded rationality and market imperfections (e.g. time leads and lags, asymmetric information, or transactions costs). If the law puts in place economic incentives for financial institutions and companies to take on high levels of risk (e.g. through complex financial innovations such as loan securitizations in a rising asset market) and to circumvent relevant legislation and regulation that is in place (e.g. by siphoning funds through offshore entities, or by entering credit default swaps)[6], it is hardly surprising if institutions and companies act on those economic incentives. Moreover, if the incentives created by legislation turn out to be perverse with unintended consequences, then at least some of the responsibility must lie with the legislature, rather than the institutions or companies [23, 24, 26].

Changes in the law can empower and disempower vested interests, with each strategic response to the incentives created having costs and benefits for the affected parties. This empowerment and disempowerment, with its attendant costs and benefits, creates winners and losers. Welfare economics investigates not only how to optimise resource allocation for given distributions of income across markets, but the effects of different resource distributions on these winners and losers, and on society generally. One of the ways in which market participants seek to ensure that they become 'winners' out of legislative change, rather than 'losers', is to (legally) circumvent any proscriptions or restrictions on their behaviour [27].

3.2 Uncertainty, information asymmetry, complexity and 'sophisticated' investors

Innovation is, by its nature, often risky. Financial innovation, in the form of asset-backed securities issued under securitization schemes, largely facilitated much of the indirect investment by domestic and overseas institutions in U.S. housing assets [27]. As had conventionally been the case, the purpose of much of this financial innovation was to minimise risk and enhance expected returns by

---

[6] For example, credit default swaps were outside the ambit of the *Commodity Futures Modernisation Act* 2000 (U.S.) and the *Securities Exchange Act* 1934 (U.S.), with the result that they operated beyond the purview of the U.S. Commodity Futures Trading Commission and, in practice (if not in strict law) the Securities Exchange Commission. Moreover, credit default swaps were specifically excluded from State-based insurance legislation. The justification for credit default swaps lying outside these legislative regimes was that the users of these swaps are institutional (presumably sophisticated) investors, rather than (for example) uninformed consumers [25].

reducing bank funding costs, differentiating fundamentally similar products,[7] and for balance sheet management purposes. In addition however, much of this innovation—in particular, securitization contacts themselves and credit default swaps, which were designed to compensate investors when security issuers defaulted—was designed to transfer credit risk and liquidity risk [4, 5]. Almost by definition, financial innovation implies risk and uncertainty. In general, financial markets can *ex ante* cope with both. For example, risk can be hedged using derivatives; uncertainty can be mitigated using insurance. While neither mechanism can prevent losses occurring *ex post*, they do alleviate the *ex ante* concerns of risk-averse or uncertainty-averse borrowers and investors [28]. Even in an historical point of view, innovative financial instruments are closely associated with asset bubbles. For example the tulip bubble itself is a creative innovation of the day. Yet, not necessarily innovation should be a part of a crisis. The Great Depression associate no financial innovation, but common company stocks.

The transfer of risk and uncertainty downstream is *cet. par*. effective if markets are complete. For example, even if no sub-assignees can be found for a particular securitization asset, financial institutions can readily—at a price—re-bundle the asset into a synthetic collateralized debt obligation (CDO) for which counterparties can be found. Alternatively, if no sub-insurers can be found for the securitization asset, financial institutions can readily—again, at a price—re-bundle derivatives to replicate insurance (analogous to so-called 'portfolio insurance' in funds management) [29, 30].

Problems arise if markets are incomplete[8]—for example, if an institution wishing to sell a particular securitised asset is unable to find a buyer for it, either directly or indirectly. Thus if, in the examples noted earlier, no sub-assignees can be found even for the synthetic CDO, or no investors can be found to participate in the proposed 'insurance replication' then—as with any financial assets that are available for sale but for which no buyer can be found—three consequences follow. First, the risk will not be able to be transferred, since no contract counterparty can be found. This affects who, in the event of significant default or insolvency, is likely to be default losses in respect of the securitised asset. Second, the lack of buyer demand would generally imply price falls for the securitised asset (ultimately to zero).

This highlights the importance of the role of 'market makers' in financial markets. Market makers are so-called because they have sufficient clientele on the buy and sell sides of a trade that they are willing to accept the risk of holding a stock of securities to help facilitate trading (buying and selling) in those securities. All of the high profile investment banks, noted earlier, that experienced distress in the subprime crisis were market makers. If even market makers cannot find buyers for securitised assets and there no buyer demand in the market generally, then the resultant price falls (ultimately to zero) for the securitised asset represents very substantial price risk for upstream investors. As with all products, innovation implies risk.

---

[7] In terms of market structure, banking and investment is characterised by an oligopoly of large firms (eg. market-makers) with a competitive fringe of small firms. The type of product differentiation that occurred with securitisation is consistent with oligopoly theory.

[8] Strictly an economic theory, an incomplete market means a market in which, under certain conditions, the number of state-contingent claims (securities) is less than the number of states of nature. While a wide array of contingent claims is regularly traded against many states of nature (in the form of futures, options, collars, swaps and various types of insurance), the set of outcomes in nature plainly exceeds the set of claims available in the markets, implying that financial markets remain incomplete in spite of impressive innovation in recent times [31].

3.2.1 Uncertainty

Uncertainty is associated with any financial bubble. Financial crises since the 1660s were driven by uncertainty associated with future prices of a particular asset. The GFC was claimed to be a unique event—as the Turner Review in the UK described it, 'the worst financial crisis for a century'—which suggests *uncertainty* as distinct from risk *simpliciter*. Risk in financial markets is distinguishable from uncertainty on the basis that, while risk can be measured objectively, uncertainty cannot [32, 33]. Thus, by definition, risk is measurable, and can be expressed *ex ante* as a probability or a statistical coefficient. This makes it amenable to financial engineering techniques which utilise average returns, statistical variances and co-variances which can be used to help manage risk [34, 35].

In contrast, by definition uncertainty cannot be measured quantitatively, meaning that advances in financial engineering over recent decades are of limited help for companies and boards faced with considerable uncertainty. And as Professor Knight pointed out as early as 1921, the problem with commercial life—and in this context, with evaluating corporate insolvency in particular, is not business risk *per se*, but the fact that any *ex ante* judgments about uncertainty are themselves fraught with uncertainty [33].

Uncertainty is broadly characterised in economic theory as either exogenous or endogenous uncertainty. *Exogenous* uncertainty relates to factors that are exogenous to an institution or company and beyond directors' and management's control, such as the economy falling into recession, the effects of the GFC, or the impact of unanticipated legislative change.[9] This is, at its heart, a rationale for the 'business judgement' rule in corporate law.[10] No economic system can reduce or eliminate exogenous uncertainty. Its adverse impacts on companies can, however, be mitigated by appropriate insurance[11], provided there is insurance to cover the particular uncertainty (a requirement that is by no means always met in incomplete, 'real world' markets). If there is not, the directors and company management are generally forced to recognise the source of the exogenous uncertainty—assuming they are aware of it—as a constraint on its decision-making, and simply do the best they can in the circumstances, 'in the interests of the company as a whole'.

In contrast, *endogenous* uncertainty results from stakeholders' decisions. Examples might include uncertainty about whether and how much bank debt will be rolled over in the face of successive monthly defaults that have breached interest cover and debt covenants; or uncertainty about whether secured creditors will appoint a receiver in these circumstances. Endogenous uncertainty can be reduced to some degree by company management who are prepared to incur the search costs

---

[9] The law itself may also generate uncertainty. For example, the uncertainty resulting from the conflicting incentives in the Australian *Corporations Act* to, on the one hand, continuously disclose reasonable suspicions of insolvency while, on the other hand, simultaneously continuing to try to trade out of difficulty, is itself a prime example.

[10] See for example, Section 180 of the *Corporations Act* (Cth) in Australia; and in a U.S. context, *Aronson v. Lewis*, 473 A.2d 805, 812 (1984); and *Puma v. Marriott*, Del. Ch., 283 A.2d 693, 695 (1971). In concept (though not in law), the business judgement rule could possibly have been used to defend the securitizer in the recent Australian Federal court case of *Wingecarribee Shire Council v Lehman Brothers Australia (in Liq.)* [2012] FCA1028. The Applicant's case was based, however, on allegations of misleading or deceptive conduct, for which the business judgement rule has no application as a defence. This is presumably why the Applicant's lawyers brought the case in those terms, rather than on the basis of a breach of duty of care having caused Council losses.

[11] For example, mortgage insurance in a securitization.

necessary to make more informed decisions, or otherwise decide—since it is within their control—to do something about it. In the face of investor and market ignorance, introducing a high level of complexity into securitized financial products and transactions can amplify the effects of (largely endogenous) uncertainty.[12]

It is important to distinguish between exogenous and endogenous uncertainty if there is any possibility of apportioning any legal culpability (liability) to the various stakeholders in a securitization. There is plainly more scope for using the exogenous uncertainty resulting from the GFC (for example) as the basis of an argument to defend financial institutions' and companies' behaviour in unique, highly uncertain times; and less scope for doing so on the basis of any endogenous uncertainty created as a result of their own decisions. In that regard, financial institutions and companies could be argued to be 'the authors of their own misfortune'.[13]

3.2.2 Information asymmetry

Information asymmetry relates to the fact that different people have different knowledge about the same thing. For example, the borrower buying mortgage insurance typically knows more about her ability to repay her housing loan than the insurance company. She also knows more about the risks of lending to her than the lender. Financial market participants have incentives to create information asymmetries, in order to increase their bargaining power when negotiating on contracts [36]. Information asymmetries can also lead to weak (or ultimately non-existent) markets—even in financial market products [37].

For example, when negotiating for the transfer of risks in securitization schemes with downstream parties, the transferor typically knows more about those risks than the transferee. In any chain of risky asset sales one after another, upstream bidders will expect this, so that part of the benefit of winning 'earlier' contracts is the information rent that becomes valuable when later on-selling. Yet if those risks have been transferred downstream a sufficient number of times, potential transferees may become wary of purchasing (taking on the risk), knowing that they might be successful only if they bid too high a price.[14] Realising that they are more likely to outbid other, more informed bidders only if they bid too much for the contract, uninformed bidders may deliberately under-bid, or not bid at all. If they do not bid enough, the seller will refrain from selling, choosing instead to bear the risk itself.

In this way, the ability to transfer risk downstream may diminish (or even cease), the further downstream the risk has been transferred already. The downstream party who is left bearing the risk may have 'won' the contract, but information asymmetries may well have led to a 'winners' curse', in which the bidders for securitized products were successful simply because they had bid too much [38]. This may arguably be what happened in the months preceding the GFC, when banks refused to roll over debt facilities for AIG and other large U.S. corporates.

---

[12] Much of the Federal Government's *Report of the Parliamentary Inquiry into Financial Products and Services in Australia* (November 2009) was fundamentally concerned with these types of problems: see Parliamentary Joint Committee on Corporations and Financial Services (Nov 2009), *Inquiry into Financial Products and Services in Australia,* Australian Government, Canberra.

[13] Cf. The judgement of the Full Bench of the Australian High Court case of *Wynbergen v Hoyts Corporation* (1997) 149 ALR 25, per Hayne J. at p. 30. See also (1997) 72 ALJR 65; or [1997] HCA 52.

[14] That is, the price may be 'too high' either in the sense that it over-compensates for the level of risk, or (perhaps more likely) in the sense that the bidder still gains, but not by as much as originally anticipated.

3.2.3 Complexity

The GFC is quite unique with the fact that financial innovation of the day (Asset backed securities, Credit default swaps, etc.) are overly complex compared to financial assets associated with previous asset bubbles. In some cases, because of the complexity of the new products, senior management in financial institutions and companies understood little of the investment risks.[15] As Prof. Schwarcz has pointed out, this complexity in financial products did not arise for its own sake, nor did it (necessarily) arise from an intention to obfuscate. It arose in response to investor demands for mechanisms that facilitate the transfer and trading of risk, and for higher risk-adjusted returns [39, 40]. Even if all information about complex securitization structures were fully disclosed to investors, the level of complexity would *cet. par.* have increased the volume of information necessary to understand the investment with certainty. If potential investors (or their agents) with limited time perceived the costs of reading and understanding that complexity to outweigh the incremental benefit, they would have had incentive to resort to simplifying heuristics, such as credit ratings, as substitutes for fully understanding the risks [39];[16] or simply, at a price, outsource (transfer) the risk by engaging an insurer or credit default swap counterparty. Prof. Stiglitz has articulated this argument further, highlighting how the complexity of financial products created by U.S. banks and institutions increased both risk and information asymmetries [21, 41].

Moreover, complexity can have distributional effects. Because of information asymmetry and agency costs[17] which are spread across an interconnected network of contracts both inside and outside the firm, financial intermediaries can extract rents for, and transfer wealth to, themselves by increasing the complexity of new securities and products they issue. As will be seen, there were plainly incentives for rent extraction and wealth transfers in many securitization schemes.

3.3 Suboptimal contracting

In economic terms, a contract is incomplete when it does not specify all parties' rights and responsibilities in every possible situation. More technically, the contract is insufficiently state-contingent, meaning that its terms, whether express (written or oral) or implied, do not cover all of the parties' rights and responsibilities for all of the contingencies that affect the parties [42].

Frequently, though not always,[18] this is due to transactions costs. For example, the *ex-ante* costs of specifying a particular (e.g. remote) contingency in the contract —or equivalently, every possible contingency in the contract—may exceed the *ex-ante* gains from doing so. It may also be because the parties cannot foresee all of the

---

[15] Cf. the Australian Federal Court case of *Wingecarribee Shire Council v Lehman Brothers Australia (in Liq.)* [2012] FCA 1028, in which the Court pointed out that, rather than the documentation surrounding collateralised debt obligations (CDOs) being too complex, the securitizer's liability was grounded in evidence that they failed to provide an adequate explanation of the potential investment risks (eg. from the GFC) to their client Councils. The decision is currently on appeal.

[16] Credit rating agencies' methods of rating structured products such as securitisations are imprecise, subject to errors in data, errors in assumptions and errors in modelling. Further, credit rating agencies do not perform due diligence on the loans underlying securitizations [40].

[17] See below.

[18] For example, a contract may be incomplete because one party has private information about factors that affect the payoff between the parties, and chooses not to share this information with the other contracting parties [43].

contingencies that arise during the course of the contract which affect their welfare [44].[19]

Possibly, the parties to the various contracts comprising securitizations prior to the GFC could not foresee the possibility that underlying asset prices might not continue to rise, but must—at least at some stage—level off or fall. It is probably more likely, however, that the agents for these contracting parties simply perceived the *ex-ante* costs of specifying the various payoffs in the event of underlying asset price falls to exceed the *ex-ante* benefits—particularly if, as a result of their own separate contracting or other legal arrangements,[20] their own assets were protected from litigation risk by downstream parties who would ultimately lose money when the contingency eventuated.

If the contract is insufficiently state-contingent because of asymmetric information (either between the contracting parties *inter se*, or between the contracting parties and external decision-makers such as regulators), moral hazard or adverse selection may be possible.[21] Moral hazard can occur when contractual incompleteness creates incentives for agents to act in their own self-interest at the expense of others, so that they do not bear the full consequences of their actions. In the securitization context, for example, where the quality of the underlying investment may be difficult to ascertain because it is packaged jointly with other investments, it could be optimal for a securitizer, who knows the quality of the underlying investments in the asset pool, to seek to guarantee performance to institutional investors by contracting with a mortgage insurer.[22] Once mortgage insurance is in place, however, the insurance creates a moral hazard problem for the securitizer (or its fund manager), who may no longer manage its asset portfolio with sufficient care and diligence [6, 7].

Another example of moral hazard arises where securitizers and other contracting parties either transfer the risks downstream (e.g. by assigning their rights to another party in exchange for consideration), or enter into credit default swaps as a form of 'insurance' against potential defaults. In either case, a moral hazard problem may be created insofar as the transfer of risk induces the transferors in the securitization chain to *cet. par.* undertake riskier investments or continue to undertake highly risky activities. A similar incentive arises if downstream parties purchase on a 'non-recourse' or 'limited recourse' basis back to upstream parties.

A similar argument applies to the various contracting parties to the extent that they have limited liability. In the event of insolvency, the limited liability of the securitizer and the other contracting parties in the securitization chain *cet. par.* effectively insures these parties against losses that accrue from highly variable market conditions (limiting downside risk), without limiting potential gains. This creates a moral hazard problem insofar as it induces securitizers and others in the securitization chain to *cet. par.* undertake riskier investments.

---

[19] A third possible explanation for contractual incompleteness, though one arguably less relevant in the current context, is that the contracting parties are boundedly rational.

[20] For example, the use of family discretionary trusts; or having key assets in their spouses' or other entities' names.

[21] For the sake of completeness, if the contract related only to trade but not investment, and the parties expected that uncertainty could only be resolved in an efficient way *ex post*, then they could specify an option to renegotiate the contract as a means of achieving efficient outcomes *ex post* [45] In the current context, securitisation contracts involve investment as well as trade, so agreeing to renegotiate (e.g. in the event of an underlying asset price collapse) is generally not a practical alternative.

[22] This also serves to signal 'safety' to investors.

3.3.1 Adverse selection

In any market in which products of different quality are traded, and only sellers know the quality of the products they sell (i.e. there is asymmetric information between buyers and sellers), poor quality products will always be sold with good quality products unless there is some device to buyers to distinguish the good from the bad. In such circumstances, the poor quality products are as likely to be purchased as the good quality products—an outcome of adverse selection.

In an insurance context, those with the greatest risk of loss *cet. par*. have a greater incentive to take out insurance against that loss. Because the applicant for the insurance knows the risks of insuring him better than the insurer, the insurer is unable to adjust the insurance premium accurately to reflect the true level of risk. This gives the insurer an incentive to, among other things, sub-insure to another (downstream) insurer, effectively transferring the risk to the latter at a price.

In a securitisation context, those originators and securitizers with the greatest risk of loss *cet. par.* had the greatest incentive to 'insure' against that loss either through mortgage insurance, transferring the risk by equitably assigning their rights to downstream investors, 'non-recourse' or 'limited recourse' clauses, or credit default swaps. Likewise, mortgage insurers have similar incentives to sub-insure downstream. Provided markets were sufficiently complete and underlying asset prices continued to rise, these strategies were effective. They ceased to be effective when U.S. house prices collapsed and buyers who are willing to bear the risk of losses could no longer be found.

3.4 Lack of accountability and the role of ethics

Put simply, markets and societies in which participants can trust each other because each observes shared ethical norms run more smoothly and efficiently than markets and societies that do not. In economic terms, markets and societies function more efficiently and effectively in the long run if all participants share the same or sufficiently similar ethical norms and values. Problems arise because some individuals and firms operating within markets and societies are able to profit, sometimes hugely, in the short run by engaging in unethical conduct. Since the long run is an accumulation of short runs, individuals and firms who engage in unethical behaviour may survive longer than expected. While it is true that transparency and publicity about the unethical conduct may impair their reputations and result in lower profits, this is by no means guaranteed [46, 47].

Nevertheless, in practice, ethical norms exist as dimensions to financial decision-making. They may sometimes be ignored, but they exist nevertheless. The efficient functioning of markets takes place within the context of the law, which is predicated on an axiology of ethical values such as investor protection, the unfairness of insider trading, and the like. In this sense, law is moral philosophy or ethics in action.[23] Similarly, the regulation of financial markets, firms and institutions is based in the ethical values of the relevant society.

Finance theory cannot escape the relevance of ethics, since many propositions in finance are inherently both positive and normative. For example, the idea that

[23] Having said this, the law is at best a very limited vehicle for ensuring ethical behaviour, for two main reasons. First, lawmaking is generally slow and tends to be reactive in its attempts to solve a social problem. Second, the law cannot be made to cover every 'bad' situation, because it is not possible to predict and outlaw all situations that give rise to 'bad' conduct. Thus, while Birks is correct in asserting that law is moral philosophy or ethics in action, mere compliance with the letter of the law may result in very minimalist ethics in action.

securitizations permit risk transfers, at a price, to downstream parties, has normative (as well as positive) implications if the price paid does not reflect the investment risks. Alternatively, in the context of the GFC, it is natural for people to have some sympathy, based on grounds of morality, for stakeholders whose wealth has been expropriated in—for example—Ponzi schemes or securitization issues that generate wealth transfers between classes of security holders. Likewise, if contagion does spread between firms, markets and even countries, it is natural for people to feel that it is somehow unfair or inequitable for others to be adversely affected through no fault of their own [48].

As suggested by the term 'moral hazard', the government bailouts of financially distressed corporations considered 'too big to fail' have moral implications, not only for the taxpayers who ultimately fund them but the corporations who are their beneficiaries.[24] Similarly, financiers' exploitation of information asymmetries between bankers and small investors through the use of confusing terms such as 'negative equity' and 'bridging equity' in prospectuses has ethical implications for both.

In economics, from which finance theory is in part derived, ethics is normally treated as a 'given', determined with reference to societal norms; and behaviour in firms and markets can be optimised within the bounds imposed by ethical and other constraints, using second best principles if appropriate. Likewise, financial maxima and optima can be discussed only for a given distribution of wealth between relevant parties: investor wealth can be maximised, but only subject to a 'given' constraint determined by the ethical norms of the society in which the firm operates [7, 50].

By way of example, consider the ethical implications of a manager in a financial institution who issues securitized notes that generate wealth transfers between classes of security holders. Assuming ethical behaviour is viewed as good for its own sake, there is a good argument (based on efficiency as much as equity or fairness) that the manager as agent should formulate business and financing policies first with reference to his ethical responsibilities and only secondarily with reference to investor (principal) wealth. Investor wealth could still be maximised, but only subject to a 'given' constraint determined by the ethical norms of the society in which the principal institution or corporation operates. By extension, the distribution of wealth between the institution's various stakeholders (e.g. shareholders, debt holders and management) could still be determined by equilibrium values of bonding costs, monitoring costs and residual loss, but only subject to a similar 'given' ethical constraint, at the limit determined by society (e.g. through regulation and norms of 'acceptable' behaviour).[25]

---

[24] For example, in the context of the AIG bailout by the U.S. Government, Prof. Crotty points to the actions of U.S. Treasury Secretary Henry Paulson, who authorised an investment of $180 billion to protect the value of U.S. corporations who would reportedly have incurred significant losses on derivative and securitization contracts if AIG had been wound up. In the process, Goldman Sachs—of whom Henry Paulson was formerly a Chief Executive—received $12.9 billion. According to Crotty, Paulson must have known that Goldman Sachs would receive billions as a result of his decision, reflecting "moral hazard of the highest order" [49].

[25] As Prof. Little points out, it is such distributional questions that are often the important ones. Yet there is no principle of morality or justice *per se* that determines how much, on average, members of particular groups should receive. A distributional judgement must be made. The question in practice, these days often asked by post-modernists, is "By whom?" In a democracy, there is no general way of resolving this. Prof. Little argues that pluralism in modern democracies is a given, and every case must be decided on its merits. Plainly Arrow's impossibility theorem continues to be of relevance to such distributional issues, notwithstanding the reluctance of some who, like Plato, regard it as perhaps accurate but ultimately not very helpful [50].

3.5 Overconfidence and domestic systemic risk

As Keynes pointed out, economists—let alone practical people in business—tend to assume that the existing state of affairs will continue indefinitely, unless there are specific reasons to expect a change [51].[26]

In the years immediately preceding the sub-prime crisis, there was a widespread belief and overconfidence among households, companies and financial institutions themselves that, for the foreseeable future, interest rates would remain relatively low, liquidity relatively high, and house and other key asset prices would continue to rise [52]. Banks and financial institutions continued to lend, underestimating the timing and extent of any future market collapse. A herd mentality[27] developed, resulting in an irrational exuberance[28] in the markets and a speculative bubble, with the attendant risks of losses in the event of its collapse.

Systemic risk can be defined as:

> *"the risk that an economic shock, such as market or institutional failure, triggers (through a panic or otherwise) either … the failure of a chain of markets or institutions or … a chain of significant losses to financial institutions, … resulting in increases in the cost of capital or decreases in its availability, often evidenced by substantial financial market price volatility" [54].*

Before the sub-prime crisis and the GFC, the United States was the world's largest economy on a GDP basis, and remains so. The U.S. Dollar is the world reserve currency. It is hardly surprising that global investor confidence is largely dependent on the state of U.S. financial markets and the health of the U.S. economy.

When U.S. house prices collapsed in the wake of the sub-prime crisis, and financial institutions globally perceived the riskiness of other financial institutions and companies (so-called counterparty risk) increasing, they lost confidence in each other's credit servicing ability, ceasing not only to continue to purchase residential mortgage-backed securities in the U.S., but also commercial asset-backed and non-asset-backed securities in the U.S. and elsewhere.

The network interconnectedness of bank finance globally can, in the event of a sufficient economic shock, transmit to a broader systemic shock if a sufficient number of banks (or sufficiently important banks) make sufficient losses that they themselves become unable to service their debts, not only to their depositors but to other banks. In the wake of the sub-prime crisis, the loss of confidence in the wholesale markets had the effect of reducing the supply of inter-bank credit, which in turn reduced the availability of credit in retail markets, and contributed to the collapse of the real economy in the United States [55, 56].

3.6 Cross-border securitization as regulatory 'arbitrage'

Investment opportunities may plainly expanded by not limiting securitization arrangements to one domestic jurisdiction, but by engaging in cross-border or

---

[26] Keynes further argued that, by its very nature, entrepreneurship must always remain partly skill and partly chance: if human nature had no inclination to take risks, there might not be much long-term investment.

[27] A herd mentality arises when every market participant, knowing that everybody (including themselves) has incomplete information about the value of a particular behaviour, rationally (*ex-ante*) interprets others' consistent prior choices as evidence of the value of that behaviour, and replicates it [53].

[28] Shiller R.J. (2005), *Irrational Exuberance*, Crown, New York.

international securitization. Equally however, the ability to securitize across international borders creates incentives to not only 'arbitrage' on domestic regulation, but to 'arbitrage' on an international network of legal rules.

Prior to the GFC, most securitization schemes exploited regulatory regime inconsistences existed among jurisdictions via cross border securitization in order to bypass the existing regulations. In order to make assets isolated from its originator, then practice was to transfer all assets to a SPV. As a result assets will be bankruptcy remote from its originator, which is essential for securitization to work. A SPV is a different entity from its originator. If both the originator and the SPV are in the same jurisdiction, they will be treated as two distinct companies and will be taxed separately. The innovative solution cross boarder securitizer came up with is to set up SPV in tax heavens like Cayman island to avoid U.S tax regulations. As a result, SPV and the originator could avoid US tax regulation, by being two different business entities while on the other hand can reap the benefits of being a separate entity (that is isolating assets from its originator). When a SPV is setup in another jurisdiction it could bypass the U.S Internal Revenue code of 1986, since the SPV is not an entity engaged in U.S trade or business [57].

Banks were able to transfer their risky assets off balance sheet by transferring them to a SVP. As a result banks were able to by-pass the need for reserves. Banks were able to grant more loans and sell them in the same way. In this manner risk could be shifted off-balance sheet and off shoe.

The off-balance-sheet or on-balance-sheet position of an asset depends on the fact wheatear the asset 'transfer' constitutes a sale or is a loan. This is an issue to be dealt with Accounting. Financial Accounting Standard No. 140 identifies elements of a true sale.[29] If a SPV to come under FAS 140, it will be considered a qualified SPV and thus need not to include in sponsor's consolidated statements.

3.7 Was pre-GFC securitization law suboptimal?

The U.S Commodity Futures Modernization Act 2000 prohibited Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) regulating Over-the-counter derivatives. The justification is that CDS and similar (over the counter) instruments are transacted by sophisticated parties who can fend themselves and thus there is no need to safeguard such transactions by the SEC and CFTC. Similarly, CDS were (deliberately) not considered insurance contracts. Thus avoided state insurance regulations. State of New York amended the insurance law to exclude CDOs from coverage. The justification is that CDS are dealing with institutional investors but not consumers [4, 25].

---

[29] 1. The transferred assets have been isolated from the transferor—put presumptively beyond the reach of the transferor and its creditors, even in bankruptcy or other receivership.

2. Each transferee (or, if the transferee is qualifying special-purpose entity (SPE), each holder of its beneficial interests) has the right to pledge or exchange the assets (or beneficial interests) it received, and no condition both constrains the transferee (or holder) from taking advantage of its right to pledge or exchange and provides more than a trivial benefit to the transferor.

3. The transferor does not maintain effective control over the transferred assets through either (1) an agreement that both entitles and obligates the transferor to repurchase or redeem them before their maturity or (2) the ability to unilaterally cause the holder to return specific assets, other than through a clean-up call.

See Summary of Statement No. 140, Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities-a replacement of FASB Statement No. 125 (Issued 9/00), Financial Accounting Standards Board. Online <http://www.fasb.org/summary/stsum140.shtml&pf=true>

On one hand CDSs were not regulated as insurance enabling non-insurable interest holders gaining protection over default of an entity, ultimately leading to betting. On the other hand no authority was overseeing the process. As a result when sup-prime borrowers defaulted, the loss was passed to the investor and then to the CDS provider. Near bankruptcy of AIG is the classic example of risk transfer from the lender to the insurer via the investor. Finally when AIG was bailout, the loss was actually shifted to the U.S treasury in lieu of tax payer [25].

4. Summary

This chapter has sought to provide a contextual background to those that follow. The effects of excess system liquidity and easy credit conditions, executive compensation arrangements which encouraged excessive risk-taking (e.g. through financial innovations such as loan securitization), banking and investment activity that sought to circumvent extant regulation, and the bursting of the U.S. housing bubble together culminated in the U.S. sub-prime crisis. Further, because many U.S. institutions and corporates had entered into contracts (e.g. securitization contracts, insurance/sub-insurance contracts, and credit default swaps) which spanned jurisdictions, the effects of what would otherwise have been a primarily U.S. sub-prime crisis were felt beyond the United States, in Britain and elsewhere in Europe.

This chapter identified and described the salient or root causes of the GFC. Law and legal regulation create incentives and disincentives for market participants to behave in particular ways. A desire for innovation, fuelled by high levels of system liquidity and executive compensation arrangements that encouraged management to undertake high levels of risk, together with a speculative bubble in the U.S. housing market and incomplete regulation, gave rise to highly complex financial products. In the presence of asymmetric information, this complexity gave rise to uncertainty and incomplete contracting, which featured significant moral hazard and adverse selection. Overconfidence in a rising market and lapses of ethical judgement when faced with incomplete regulation resulted, with the collapse of the U.S. housing bubble, in a loss of confidence in U.S. markets, contributing to systemic risk and so-called cross-jurisdictional 'contagion'. Whether this so-called 'contagion' is true contagion or mere contractual interdependence between institutions in different jurisdictions, is a separate matter.

As far as policy implications are concerned, regulating asset backed securities and associated derivatives would be a *prima facie* solution for the mortgage crisis. Yet, there should be wide financial policies to prevent a similar crisis, since; next time it would be some other asset that may create the asset bubble. Financial intelligence units of each individual nation should extend their scope in order to monitor developments in financial bubbles. Like in China, any innovative financial instrument should be registered with financial intelligence units and their mechanism should be analyses and measured in terms of financial safely of the innovation.

There will be no permanent solution to prevent a future for a financial crisis. All we can (and should) do is to avoid financial bubbles that may lead to a crisis. We never know when it would be the next crisis. Yet, we ought to know at least a few things. We know for a fact that it would be some financial asset that will create an asset bubble. There will be associated factors that may contribute to the creation of the bubble. For example financial innovation, law create incentives, etc. All we got to do is keeping an open eye on associated factors and their movements. Global regulation such as BASEL accords can influence individual financial systems to take necessary regulatory measures to regulate and control associated factors of a financial crisis.

DOI: http://dx.doi.org/10.5772/intechopen.90728

Author details

Shanuka Senarath
Department of Economics, University of Colombo, Colombo, Sri Lanka

*Address all correspondence to: shanuka.senarath@griffithuni.edu.au

References

[1] Allen F, Carletti E. The role of liquidity in financial crises. Available at: SSRN 1268367. [Accessed: 04-09-2008]

[2] Sorkin AR. JP Morgan Pays $2 a Share for Bear Stearns. New York: The New York Times; 2008

[3] Omarova ST. Wall street as community of fate: Toward financial industry self-regulation. University of Pennsylvania Law Review. 2010;**159**:411

[4] Senarath S, Copp R. Credit default swaps and the global financial crisis: Reframing credit default swaps as quasi-insurance. Global Economy and Finance Journal. 2015;**8**(1):135-149

[5] Senarath S. The Dodd-Frank Act doesn't solve the principal-agent problem in asset securitisation. LSE Business Review; 2017

[6] Senarath S. Not so 'bankruptcy-remote': An insight into Sri Lankan securitization practices in a Post_GFC context. In: Multidisciplinary Academic Conference on Management, Marketing and Economics. Prague: MAC Prague consulting Ltd; 2016. pp. 53-60

[7] Senarath S. Securitisation and the global financial crisis: Can risk retention prevent another crisis? International Journal of Business and Globalisation. 2017;**18**(2):153-166

[8] Gori M, Witten I. The bubble of web visibility. Communications of the ACM. 2005;**48**(3):115-117

[9] Wicke J. Appreciation, depreciation: Modernism's speculative bubble. Modernism/Modernity. 2001;**8**(3): 389-403

[10] Temin P, Voth HJ. Riding the south sea bubble. American Economic Review. 2004;**94**(5):1654-1668

[11] White EN. Lessons from the Great American Real Estate Boom and Bust of the 1920s. Chicago: National Bureau of Economic Research; 2009

[12] Malpezzi S, Wachter S. The role of speculation in real estate cycles. Journal of Real Estate Literature. 2005;**13**(2): 141-164

[13] Rappoport P, White EN. Was there a bubble in the 1929 stock market? The Journal of Economic History. 1993; **53**(3):549-574

[14] White EN. Stock market bubbles? A reply. The Journal of Economic History. 1995;**55**(3):655-665

[15] Garber PM. Famous first bubbles. Journal of Economic Perspectives. 1990; **4**(2):35-54

[16] McCarty N, Poole KT, Rosenthal H. Political Bubbles: Financial Crises and the Failure of American Democracy. New Jersey: Princeton University Press; 2013

[17] Allen F, Carletti E. The role of liquidity in financial crises. 2008. Available at: SSRN 1268367.

[18] Giles MJ. A participatory teaching strategy: Developing a timeline of the global financial crisis

[19] Cohen HR. Preventing the fire next time: Too big to fail. Texas Law Review. 2011;**90**:1717

[20] Mendoza EG. Sudden stops, financial crises, and leverage. American Economic Review. 2010;**100**(5):1941-1966

[21] Roe M. The derivatives players' payment priorities as financial crisis accelerator'. Stanford Law Review. 2011;**63**:539

[22] Wilmarth AE. How should we respond to the growing risks of financial conglomerates? 2002

[23] Koumakhov R. Conventions in Herbert Simon's theory of bounded rationality. Journal of Economic Psychology. 2009;**30**(3):293-306

[24] Tversky A, Kahneman D. Judgment under uncertainty: Heuristics and biases. Science. 1974;**185**(4157): 1124-1131

[25] Sjostrom WK Jr. The AIG bailout. Washington and Lee Law Review. 2009; **66**:943

[26] Kaldor N. Welfare propositions of economics and interpersonal comparisons of utility. The Economic Journal. 1939;**49**:549-552

[27] Simkovic M. Competition and crisis in mortgage securitization. Indiana Law Journal. 2013;**88**:213

[28] Alchian AA. Uncertainty, evolution, and economic theory. Journal of Political Economy. 1950;**58**(3):211-221

[29] Black F, Rouhani R. In: Fabozzi FJ, editor. Constant Proportion Portfolio Insurance and the Synthetic Put Option: A Comparison. Cambridge, Mass: Institutional Investor focus on Investment Management, Ballinger; 1989. pp. 695-708

[30] Black F, Jones R. Simplifying portfolio insurance. Journal of Portfolio Management. 1987;**14**(1):48

[31] Arrow KJ. The role of securities in the optimal allocation of risk-bearing. In: Readings in Welfare Economics. Palgrave Macmillan, London; 1973. pp. 258-263

[32] Turner A. The Turner review: a regulatory response to the global banking crisis. Financial Services Authority. Available from: www.fsa.gov.uk/pages/Library/Corporate/turner/index.shtml 2009

[33] Knight FH. Risk, uncertainty and profit. In: Courier Corporation. Cambridge: Dover Publications, Inc; 2012

[34] Sharpe W, Alexander GJ, Bailey JW. Investments

[35] Copeland TE, Weston JF, Shastri K. Financial Theory and Corporate Policy. Reading, MA: Addison-Wesley; 1988

[36] Edlin AS, Stiglitz JE. Discouraging rivals: Managerial rent-seeking and economic inefficiencies. The American Economic Review. 1995;**85**(5):1301-1312

[37] Stiglitz JE, Weiss A. Credit rationing in markets with imperfect information. The American Economic Review. 1981; **71**(3):393-410

[38] Wilson R. Competitive Bidding with Disparate Information. Graduate School of Business, Stanford University; 1966

[39] Schwarcz SL. Regulating complexity in financial markets. Washington University Law Review. 2009;**87**:211

[40] Partnoy F. The paradox of credit ratings. In: Ratings, Rating Agencies and the Global Financial System. Boston, MA: Springer; 2002. pp. 65-84

[41] Stiglitz JE. Freefall: America, Free Markets, and the Sinking of the World Economy. New York: WW Norton & Company; 2010

[42] Tirole J. Incomplete contracts: Where do we stand? Econometrica. 1999;**67**(4):741-781

[43] Allen F, Gale D. Measurement distortion and missing contingencies in optimal contracts. Economic Theory. 1992;**2**(1):1-26

[44] Williamson OE. The economic institutions of capitalism. Firms, markets, relational contracting. In: Das Summa Summarum des Management. Wiesbaden: Gabler; 2007. pp. 61-75

[45] Schwartz A, Watson J. The law and economics of costly contracting. Journal of Law, Economics, and Organization. 2004;**20**(1):2-31

[46] O'Brien J. Redesigning Financial Regulation: The Politics of Enforcement. West Sussex: John Wiley & Sons; 2006

[47] Kapur BK. Harmonization between communitarian ethics and market economics. Journal of Markets & Morality. 1999;**2**(1):35-52

[48] Drew JM, Drew ME. The identification of Ponzi schemes: Can a picture tell a thousand frauds? Griffith Law Review. 2010;**19**(1):51-70

[49] Crotty J. Structural causes of the global financial crisis: A critical assessment of the 'new financial architecture'. Cambridge Journal of Economics. 2009;**33**(4):563-580

[50] Little IM. A Critique of Welfare Economics. Oxford: OUP; 2002

[51] Keynes JM. The General Theory of Employment, Interest, and Money. Cham: Palgrave Macmillan; 2018

[52] Vasile D, Sebastian TC. Radu T. a behavioral approach to the global financial crisis. Economic. Science. 2011; **20**(2):340-346

[53] Bikhchandani S, Hirshleifer D, Welch I. A theory of fads, fashion, custom, and cultural change as informational cascades. Journal of Political Economy. 1992;**100**(5): 992-1026

[54] Schwarcz SL. Systemic risk. The Georgetown Law Journal. 2008;**97**:193

[55] Alexander K, Dhumale R, Eatwell J. Global Governance of Financial Systems: The International Regulation of Systemic Risk. Oxford: Oxford University Press; 2005

[56] Anabtawi I, Schwarcz SL. Regulating systemic risk: Towards an analytical framework. Notre Dame Law Review. 2011;**86**:1349

[57] Kothari V. Securitization: The Financial Instrument of the Future. Singapore: John Wiley & Sons (Asia) pte Ltd; 2006

[58] Keynes JM. The general theory of employment. The Quarterly Journal of Economics. 1936;**51**:209-223